

Serial No. 10/714,807

REMARKS

Status of Claims:

Claims 13-25 are pending herein. Claims 1-12 have been cancelled since their subject matter is claimed in the parent application 09/862,541.

Claim 13 is the only independent claim and has been amended herein.

Rejection of Claim 13-25 under 35 U.S.C. 112

Claims 13-25 are rejected under 35 U.S.C. 112, first paragraph, on the grounds that the specification allegedly does not enable any person skilled in the art to make the invention commensurate in scope with these claims. Specifically, the Action notes in paragraph 3, with regard to Claim 13, that the specification does not reasonably provide enablement for "depositing a body region" and "forming at least one trench extending through ... and the substrate" recited in Claim 13.

It is respectfully submitted that the amendment to Claim 13 herein renders the rejection moot. Specifically, as the Examiner suggested, the above claim language "depositing a body region" has been amended to read "forming a body region ... by an implantation of a second conductivity type". In addition, the claim language ", and the substrate" has been deleted so as to be consistent with the disclosure in Fig. 4.

Applicants respectfully submit that the Section 112 issue has been addressed herein and is now moot. Reconsideration and withdrawal of the rejection are therefore requested.

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Rejection of Claims 13-25 under 35 U.S.C. 103(a)

Claims 13-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,413,822, hereinafter "Williams") in view of Wolf et al. (Silicon Processing for the VLSI Era- Vol. 1 : Process Technology, hereinafter "Wolf").

This rejection and its supporting remarks are respectfully traversed.

Independent Claim 13, as amended herein, is directed to a method of making a trench DMOS transistor having overvoltage protection. (i) A substrate of a first conductivity type is provided. (ii) A body region is formed by an implantation of a second conductivity type and (iii) at least one trench is formed extending through the body region, wherein the body region is formed prior to the formation of the at least one trench. (iv) An insulating layer that lines the trench and overlies said body region is deposited. (v) A conductive electrode is deposited in the trench overlying the insulating layer, and (vi) a dopant of the first conductivity type is implanted to form a source region in the body region adjacent to the trench. (vii) An undoped polysilicon layer overlying a portion of the insulating layer is deposited. (viii) A dopant of the first conductivity type is implanted to form a plurality of cathode regions in the undoped polysilicon layer, and said plurality of cathode regions are separated by at least one anode region.

Applicant respectfully submits that Williams, and the embodiments of Figures 23 and 24A-Q of Williams specifically, is directed to a process of manufacturing of a SSA trench DMOSFET device. As shown in Figures 24E and 24H of Williams, the *trench* is formed (24E) *before the body region P_B is formed* (24H).

In contrast, Applicant's invention according to amended independent Claim 13 *forms body region (ii) before the trench is formed (iii)*. The order of forming trench and body region in Williams is *opposite* to the order of that set out in Applicant's amended independent Claim 13.

Wolf also fails to teach or suggest a method in accordance with Applicant's amended independent Claim 13.

For at least the foregoing reason, it is respectfully submitted that independent Claim 13, as amended herein, is patentable over the combination of teachings of Williams and Wolf.

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Claims 14-25 are dependent on, and contain all the limitations of, independent Claim 13, and as such are submitted to be patentable for at least the same reasons as Claim 13.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding claim rejections under 35 U.S.C. §103(a).


CONCLUSION

Applicants submit that Claims 13-25 are presently in condition for allowance, early notification of which is earnestly solicited. Should the Examiner be of the view that an interview would expedite consideration of this Amendment or of the application at large, request is made that the Examiner telephone the Applicant's attorney at (908) 518-7700 in order that any outstanding issues be resolved.

FEES

The Office is authorized to charge any fees required to deposit account number 50-1047.

Respectfully submitted,


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